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10/663,079	09/16/2003	Alan Buckley	7631-110U1 (P5430USA)	2434

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EXAMINER	
WILKINS III, HARRY D	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,079	BUCKLEY ET AL.	
	Examiner	Art Unit	
	Harry D. Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *25-30 and 36-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24 and 31-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/633,665.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/16/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I in the reply filed on 7 April 2006 is acknowledged.

Means-Plus-Function Language

2. Instant claims 1, 5 contain the following terms written in means-plus-function format, and have been interpreted as follows:

1. "means for passing a saline solution having a substantially constant chloride ion concentration through the cell" (claim 1) is in proper means-plus-function format and is defined in the specification at pages 8 and 21 as being any device which functions to dissolve a known quantity of salt in a known quantity of water and a pump for forcing the water into the cell. More specific examples include forming a saturated solution, and then diluting the saturated solution to the required degree.

2. "means for applying a substantially constant current across the cell" (claim 1) is in proper means-plus-function format but is not specifically described in the specification. It has been interpreted to mean a power source capable of operating at a continuously changing voltage in order to maintain a constant current.

3. "means for dispensing output solution from the cell" (claim 1) is in proper means-plus-function format and is defined in the specification at page 23 as being any combination of storage tanks for dispensing the produced solutions.

4. "mixing means for mixing a concentrated salt solution from the make up tank with process water from the water tank to produce the saline solution" (claims 5 and 6)

is in proper means-plus-function format but is not specifically described in the specification. It has been interpreted to mean a combination pump/valve for selectively injecting concentrated salt solution into the process water, such as peristaltic pump 48.

5. "measuring means to measure biocidal efficacy of the output solution in the intermediate holding tank" (claims 10 and 11) is in proper means-plus-function language but is not specifically described in the specification. It has been interpreted to mean any device capable of determining the concentration of the biocidal characteristics of the output solution, such as pH, free chlorine concentration, ORP, etc.

6. "corrosion inhibitor storage and dispensing means for dosing corrosion inhibitor into the intermediate holding tank" (claim 17) is in proper means-plus-function language but is not specifically described in the specification. It has been interpreted to mean any device capable of adding a substance to the intermediate holding tank.

7. "control means to permit adjustment of operating parameters in response to information displayed" (claim 20) is in proper means-plus-function language but is not specifically described in the specification. It has been interpreted to mean any device capable of exerting a controlling factor over the apparatus in response to measured operating parameters, such as a computer controller.

8. "failsafe mechanisms to prevent output solution from being dispensed when operating parameters cannot be adjusted to ensure that the solution has the required biocidal properties or when the output solution is older than a predetermined age" claim 24) is in proper means-plus-function language but is not specifically described in the specification. It has been interpreted to mean any device which was capable of

stopping output solution from being utilized downstream should operating parameters fall outside of specified ranges.

Claim Objections

3. Claim 1 is objected to because of the following informalities: in the last line "output solution" is accidentally repeated. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 34 is not written in proper dependent format, such that it is clear what is being claim. It appears that claim 34 requires the provisions of both claims 32 and 33, therefore, examination will be based upon the assumption that claim 34 is dependent upon both claims 32 and 33.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 31 is rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al (US 4,432,856).

Murakami et al anticipate the invention as claimed. Murakami et al teach (see figure 1) an apparatus for electrochemically treating a supply of aqueous salt solution (25) including a divided electrolytic cell having anode and cathode chamber, each having an anode or cathode, respectively, and input and output lines wherein the input line to the cathode chamber was provided with a flow regulator 22, the anode and cathode were connected to a source of direct current (inherently capable of operation at constant current) and an output line from the cathode chamber was connected to an input line of the anode chamber by way of a recirculation line.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-3, 5-6, 8-16 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691).

Yamaguti et al teach (see figure 2) an apparatus for producing an output solution including (1) an electrolytic cell, (2) means for creating a solution of constant chloride ion concentration and passing it to the electrolytic cell, (3) means for dispensing the output solution from the cell. Yamaguti et al teach a power supply 23 for applying current across the anode and cathode to perform the reaction.

However, Yamaguti et al fail to teach that the power supply was capable of operating at constant current.

Broun, Jr et al teach (see col. 6) operation of an electrolytic cell to produce free chlorine in a cathode stream, where constant current was utilized.

Therefore, it would have been obvious to one of ordinary skill in the art to have applied the constant current source of Broun, Jr et al to the apparatus of Yamaguti et al because operation at a constant current would have provided a constant rate of production of products. One of ordinary skill in the art of electrolysis was aware that the rate of reaction in an electrolysis reaction was directly proportional to the current flowing according to Faraday's Law of Electrolysis.

Regarding claim 2, Yamaguti et al teach (see figure 2) that the electrolytic cell included anode and cathode chambers separated by a membrane, each chamber having a feed line through which the saline solution is fed into the chamber and output anolyte and catholyte lines.

Regarding claim 3, each of the anolyte and catholyte are considered to be output solutions.

Regarding claim 5, Yamaguti et al teach (see figure 2) a concentrated salt solution make up tank and mixing means 109a, 109b and 109c for mixing the concentrated salt solution with the process water. It would have been obvious to one of ordinary skill in the art to have added a process water tank for the purpose of providing a buffer of water to be treated to ensure constant operation.

Regarding claim 6, the mixing means included a dispenser (pump 109b) for dispersing pulses of concentrated salt solution into the continuous flow of process water.

Regarding claim 8, the electrolytic cell of Yamaguti et al is positioned "above" the concentrated salt solution make up tank and the process water inlet.

Regarding claim 9, the apparatus of Yamaguti et al included an intermediate tank 21 for receiving the anolyte output solution.

Regarding claims 10 and 11, the apparatus of Yamaguti et al included measuring means 117a and 117b for measuring the electrical conductivity (equivalent to pH and redox potential).

Regarding claim 12, it would have been obvious to one of ordinary skill in the art to have added a storage tank for storing and/or transporting the output solution to provide a buffer of solution in case of emergency.

Regarding claim 13, the intermediate tank 21 of Yamaguti et al is considered to be a "weir tank" since it had an open top. It would have been obvious to have placed the storage tank below the intermediate tank to catch any overflow of output solution.

Regarding claim 14, it would have been obvious to have placed the storage tank such that the output solution could have been fed to a user by means of gravity to reduce reliance on electricity required to run a pump.

Regarding claims 15 and 16, it would have been obvious to have added a rinse water storage tank for mixing the output solution with water to provide mixing of the water with the biocidal output solution to provide a treated water for use. It would have been obvious to have placed the rinse water storage tank such that the treated water could have been fed to a user by means of gravity to reduce reliance on electricity required to run a pump.

Regarding claims 18-23, the apparatus of Yamaguti et al included a user interface 25c and 25d for displaying information on the performance of the apparatus and materials inputted to and outputted from the apparatus and a control CPU for adjustment of operating parameters. It would have been obvious to have utilized a conventional keypad for inputting parameters and to have added a remote control station to allow control and monitoring of the apparatus from a remote location.

Regarding claim 24, it would have been obvious to one of ordinary skill in the art to have utilized the signal from the redox meter 117b to provide a failsafe mechanism whereby if the output solution lacked sufficient biocidal properties then the output solution would have not been dispensed thereby ensuring that the produced rinse water provided the required amount of sterilization.

11. Claims 4 and 31-35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 3 above, and further in view of Murakami et al (US 4,432,856).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach a catholyte recirculation line for feeding at least a portion of cahotlyte form the cathode chamber to the input line of the anode chamber.

Murakami et al teach (see figure 1 and cols. 5 and 6) that the product produced and the pH of the product can be controlled by adjusting the pH of the input anolyte by way of recirculating a portion of the catholyte to the input anolyte to control the pH.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a catholyte recirculation line to the apparatus of Yamaguti et al as suggested by Murakami et al for the purpose of controlling the pH of the anolyte output solution.

Regarding claim 31, Yamguti et al teach the divided electrolytic cell, the flow regulator on the cathode chamber input line, and Broun, Jr et al suggest the constant direct current power source. Murakami et al suggest the recirculation line for controlling the pH.

Regarding claim 32, Yamaguti et al teach using a conductivity (pH) probe in the output line from the anode chamber.

Regarding claims 33 and 34, Murakami et al suggest control of the pH of the output anolyte by feeding a portion of the catholyte into the input line of the anode chamber. Thus, it would have been obvious to one of ordinary skill in the art to have

provided a pump for moving the catholyte into the input line and to have controlled the amount of catholyte flowed by the pump by utilizing the pH meter of Yamaguti et al in order to have utilized a conventional feedback control loop for controlling the pH of the anolyte in the output line.

Regarding claim 35, it would have been obvious to one of ordinary skill in the art to have provided a degassing unit in the recirculation line to have prevented any hydrogen gas produced at the cathode and dissolved in the catholyte from being transferred into the input line of the anode chamber.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 6 above, and further in view of Howard (US 5,026,946).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach that the dispenser was a tube having a closed end, an open, free end and a plurality of holes along its length.

Howard teaches (see figures) a dispenser for mixing of two fluid streams wherein the dispenser was an elongate tube having a closed end, an open, free end and a plurality of holes along its length to provide adequate mixing.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the dispenser of Howard for the "Injector" of Yamaguti et al because the dispenser of Howard provided adequate mixing of two fluid streams.

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguti et al (US 5,445,722) in view of Broun, Jr et al (US 3,250,691) as applied to claims 1 and 3 above, and further in view of Malchesky (US 5,932,171).

The teachings of Yamaguti et al and Broun, Jr et al are described above.

However, Yamaguti et al and Broun, Jr et al fail to teach corrosion inhibitor storage and dispensing means for dosing corrosion inhibitor into the intermediate holding tank.

Malchesky teaches (see col. 4) that electrolyzed water to be used for sterilization should be treated with corrosion inhibiting additives to prevent the devices to be sterilized from being subjected to corrosion.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a conventional storage (i.e.-tank) and dispensing (i.e.-pump) means for dosing the corrosion inhibitor into the output solution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw